

Assessing Adolescent Pregnancy — Maine, 1980–1996

Despite prevention efforts at the state and federal levels, adolescent pregnancy rates in the United States are among the highest in developed countries (1). The 1996 Personal Responsibility and Work Opportunity Reconciliation Act* mandates a national strategy to prevent pregnancy among teenagers and requires that states establish goals to reduce the incidence of “out-of-wedlock” pregnancies, particularly among teenagers. Adolescent pregnancy and birth rates are declining across the na-

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tion (2); in particular, the rates have decreased substantially in Maine (2). This report summarizes an evaluation of pregnancy rates for persons aged 15–19 years in Maine and an assessment of clinical and behavioral factors that may have contributed to decreasing rates during 1980–1996 by the Maine Department of Human Services, Bureau of Health (MBH); the Family Planning Association of Maine (FPA); and CDC. From 1980 through 1996, pregnancy rates in Maine among females aged 15–19 years decreased from 67.9 to 45.6 pregnancies per 1000. A decrease in oral contraceptive (OC) use and increases in the use of condoms and long-acting methods were significantly correlated with the decrease in adolescent pregnancy rates from 1984 to 1996.

Maine vital statistics data for 1980–1996 were used to assess adolescent pregnancies, births, and abortions by age, marital status, education, partner's age, and previous pregnancies. Annual reports from FPA, the only recipient of Title X[†] funds in Maine and the largest provider of reproductive health-care services in the state, were used to examine clinical factors that may have contributed to decreasing adolescent pregnancy rates (e.g., what contraceptive methods clients reported using). The Maine Pregnancy Risk Assessment Monitoring System (PRAMS), a survey of new mothers about pregnancy behaviors, practices, and outcomes, was used to determine the number and rate of unintended pregnancies among adolescents who gave birth. Chlamydia rates from the MBH Sexually Transmitted Diseases Surveillance System were used as a proxy indicator to help evaluate trends in unprotected intercourse among adolescents. The Maine Youth Risk Factor Behavior Survey, a survey of adolescents in grades 9–12, was used to obtain information about adolescent sexual behavior. Data from the Maine Department of Education were used to assess high school drop-out rates and the percentage of high school seniors who intended to pursue postsecondary education.

Adolescent pregnancy rates were calculated as the total reported live-born infants, abortions, and fetal deaths per 1000 females in Maine for females aged 15–17, 18–19, and 15–19 years (3); fetal losses at <20 weeks' gestation were not included. Population data are from the MBH, Office of Data, Research and Vital Statistics. Trends in adolescent pregnancy, birth, and abortion rates were tabulated by demographic variables, and changes in potential explanatory variables were examined over time. Correlation coefficients (*r*) and *p* values were used to assess the strength and significance of correlations between these factors and adolescent pregnancy rates.

From 1980 through 1996, pregnancy rates in Maine among females aged 15–19 years decreased from 67.9 to 45.6 pregnancies per 1000; the largest decrease occurred from 1991 to 1992 (Table 1, Figure 1). Both birth and abortion rates decreased among females aged 15–17 and 18–19 years. Among females aged 15–19 years, the percentage of pregnancies among those who were unmarried increased from 58% to 83%, while the percentage of pregnancies among those with a previous pregnancy decreased from 29% to 24%. There were no substantial changes in mean years of education or partner's age among adolescents who became pregnant.

From 1984 through 1996, the percentage of females aged 15–19 years who were seen at FPA clinics was approximately 22% per year (Table 1). OCs have been the predominant family planning method of adolescents at the FPA clinics, but the percentage using OCs declined from 75% to 58%. Condom use increased from 5% to 14%, and

[†]Title X provides federal grants for family planning services to adolescents and low-income women.

TABLE 1. Pregnancy rates* and potential determinants of pregnancy among adolescents, by percentage or rate, and correlations between the potential determinants and adolescent pregnancy rates — Maine, 1980–1996

Year	Females aged 15–19 years							Males and females in high school		
	Pregnancy rate	% Who were FPA clients	% of FPA [†] clients reporting primary contraceptive method			Chlamydia rates	Births unintended at conception		% High school dropouts	% High school seniors with intent to pursue post-secondary education
			OCs [§]	Condoms	Long-acting methods [¶]					
						%	(95% CI**)			
1980	67.9							4.2%	44.8%	
1981	60.7							3.9%	45.9%	
1982	55.7							3.6%	45.7%	
1983	60.5							3.6%	47.7%	
1984	63.2	21.8%	75.4%	5.2%	0.4%			3.6%	51.1%	
1985	63.5	22.5%	78.0%	4.5%	0.3%			3.5%	53.6%	
1986	61.1	23.6%	81.0%	3.8%	0.2%			3.5%	56.3%	
1987	58.3	24.1%	82.4%	4.1%	0.1%			3.8%	56.6%	
1988	63.6	22.2%	81.8%	5.3%	0.1%	27.4		4.0%	56.7%	
1989	64.2	23.3%	80.0%	5.9%	0.1%	30.4	65.0% (54.6%–75.3%)	3.7%	53.6%	
1990	64.7	23.8%	78.4%	6.7%	0.0%	29.8	70.7% (60.2%–81.3%)	3.3%	54.7%	
1991	62.9	23.7%	77.9%	6.9%	0.1%	21.4	60.5% (49.7%–71.3%)	3.0%	56.6%	
1992	50.9	21.7%	78.3%	7.5%	0.3%	15.7	80.5% (69.3%–91.8%)	2.9%	56.4%	
1993	52.3	22.2%	74.4%	9.7%	1.2%	13.0	76.4% (65.5%–87.3%)	2.7%	57.8%	
1994	50.2	21.7%	68.7%	10.8%	4.4%	10.3	72.1% (60.0%–83.9%)	2.9%	58.4%	
1995	49.3	26.0%	55.1%	12.0%	10.1%	10.8	85.2% (75.8%–94.5%)	3.0%	59.4%	
1996	45.6	23.9%	58.5%	14.1%	11.2%	7.5	76.5% (65.8%–87.2%)	2.9%	62.1%	
Correlation with adolescent pregnancy rates (r)		–0.12	0.76 ^{††}	–0.85 ^{††}	–0.77 ^{††}	0.96 ^{††}	–0.77 ^{††}	0.74 ^{††}	–0.57 ^{††}	

*Per 1000 female population aged 15–19 years.

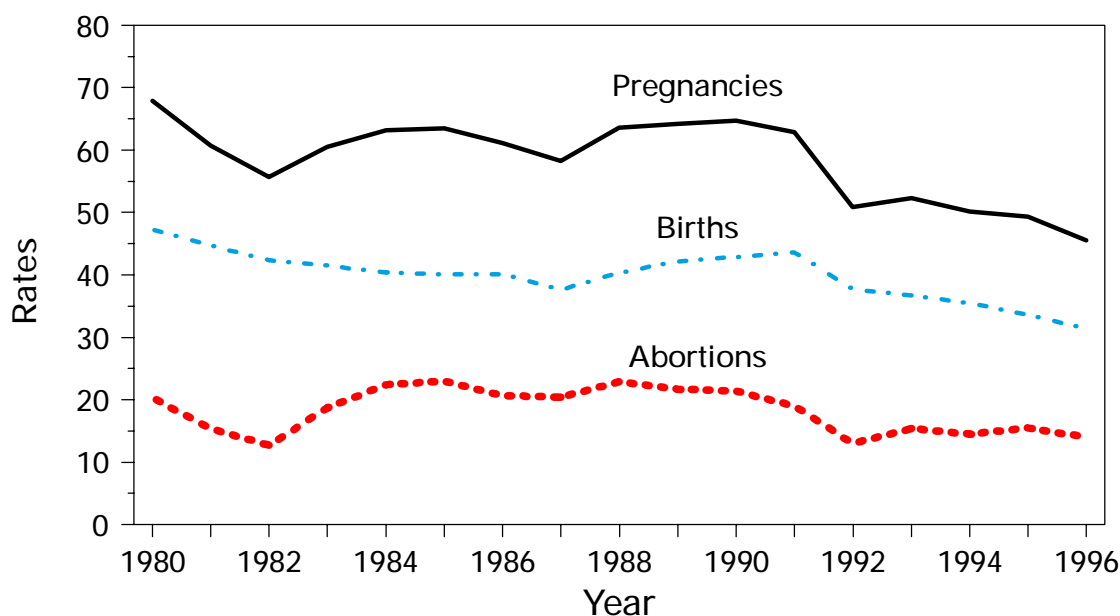
[†] Family Planning Association of Maine.

[§] Oral contraceptives.

[†]E.g., Norplant® (Wyeth-Ayerst, Philadelphia, Pennsylvania) and Depo-Provera® (The Upjohn Company, Kalamazoo, Michigan). Use of trade names and commercial sources is for identification only and does not imply endorsement by CDC or the U.S. Department of Health and Human Services.

**** Confidence interval**

†† $p < 0.05$.

*Adolescent Pregnancy — Continued***FIGURE 1. Pregnancy, birth, and abortion rates per 1000 females aged 15–19 years—Maine, 1980–1996**

the use of long-acting contraceptive methods (primarily Norplant^{®§} [Wyeth-Ayerst, Philadelphia, Pennsylvania] and Depo-Provera[®] [The Upjohn Company, Kalamazoo, Michigan]) increased from <1% to 11%. Both the decrease in OC use and the increase in use of condoms and long-acting contraceptive methods among FPA clients were significantly correlated with the decrease in adolescent pregnancy rates from 1984 to 1996 ($r=0.76$, -0.85 , and -0.77 , respectively).

Changes in some behavioral factors also were significantly correlated with the decrease in adolescent pregnancy rates. From 1988 to 1996, rates for chlamydia among females aged 15–19 years (a proxy for having unprotected intercourse) decreased from 27 to eight cases per 1000 (correlation with decrease in adolescent pregnancy rates: $r=0.96$). From 1989 to 1996, unintended pregnancies among adolescent females who gave birth increased from 65% to 77% (correlation with decrease in adolescent pregnancy rates: $r=-0.77$). Among males and females, from 1980 to 1996, the high school dropout rate decreased from 4% to 3% (correlation with decrease in adolescent pregnancy rates: $r=0.74$), and the percentage of high school seniors who indicated a goal to pursue postsecondary education increased from 45% to 62% (correlation with decrease in adolescent pregnancy rates: $r=-0.57$). The percentage of males and females aged 15–19 years who had ever had sexual intercourse was 58% in 1991, 49% in 1995, and 52% in 1997; the changes in these percentages were not statistically significant.

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Editorial Note: A thorough assessment of factors influencing adolescent pregnancy rates at the state level can be used to target adolescent pregnancy prevention efforts and evaluate progress toward national health objectives for 2000. This retrospective assessment of pregnancy rates among adolescents in Maine illustrates how states can identify trends in adolescent pregnancy rates and associated factors. In Maine, changes in behavioral factors may have had the greatest impact on adolescent pregnancy rates, including increased condom use, decreased high school drop-out rates, and increased intent to pursue postsecondary education. The use of long-acting contraceptive methods was rare before 1993 and therefore could not have contributed to the large decrease in adolescent pregnancy rates from 1991 to 1992. Decreases in rates for chlamydia may indicate a decrease in the incidence of unprotected intercourse among this group.

This report is subject to at least five limitations. First, a critical factor that could not be assessed adequately was the school health education program in Maine. However, the 1996 Maine School Health Education Profile indicates that 97% of public middle schools and senior high schools require education about human immunodeficiency virus; of those schools, 85% taught condom efficacy and 62% taught correct use of condoms (J. Foster, Maine Department of Education, personal communication, 1998). Second, individual characteristics or behaviors could not be connected to the outcome of adolescent pregnancy and persons could not be followed over time. Third, data were incomplete for some factors that were examined and lacking for other potentially important determinants (e.g., patterns of care and visits at family-planning clinics and qualitative data about attitudes of adolescents over time). Fourth, most of the data had not been computerized, which limited analytic possibilities. Finally, changes in reporting practices over time could account for the change in pregnancy rates among adolescents; however, there were no obvious changes in reporting practices during 1980–1996 (Maine Vital Statistics Office, personal communication, 1998).

As a result of the findings in this report, the collaborating agencies have recommended the development of a prospective system to monitor and assess adolescent pregnancy rates and potential determinants of risk for pregnancy among adolescents. The Maine Adolescent Pregnancy Assessment Team would be a collaboration between agencies that collect data and agencies that use the data in making decisions on policies and programs (i.e., FPA; state departments of human services, education, and labor; and other state, professional, and community-based organizations). Changes in existing data availability and evaluation (providing adequate confidentiality) would need to facilitate 1) access to data about persons to allow follow-up over time, 2) examination of data by relevant geographic areas (e.g., county, school district, or community), 3) the linking of vital statistics and family planning clinic data to adolescents' clinic experience and pregnancy status, and 4) access to additional relevant data sources (e.g., the Maine School Health Education Profile). The information would enable policy makers and program planners to develop plans for adolescent pregnancy-prevention efforts. Other states may want to consider using a similar prospective assessment of adolescent pregnancy rates and potential determinants to better guide research and prevention efforts at the state level.

References

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